

**Trade and Industrial Education**  
**Course: Plumbing I**  
**Course Code # 5739**  
**2 Credits**

**School Year** \_\_\_\_\_

**Term:** \_\_\_\_ **Fall** \_\_\_\_ **Spring**

Student:	Grade:
Teacher:	School:
Number of Competencies in Course: <b>48</b>	
Number of Competencies Mastered:	
Percent of Competencies Mastered:	

**STANDARD 1.0: Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.**

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
1.1	Cultivate leadership skills.			
1.2	Participate in SkillsUSA-VICA as an integral part of instruction.			
1.3	Assess situations within the school, community, and workplace and apply values to develop and select solutions.			
1.4	Demonstrate the ability to work cooperatively with others.			

**STANDARD 2.0: Students will assume responsibility for the safety of themselves, their coworkers, and bystanders.**

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
2.1	Demonstrate a positive attitude regarding safety practices and issues.			
2.2	Use and inspect personal protective equipment.			
2.3	Inspect, maintain, and employ safe operating procedures with tools and equipment, such as hand and power tools, ladders, scaffolding, and lifting equipment.			
2.4	Demonstrate continuous awareness of potential hazards to self and others and respond appropriately.			
2.5	Assume responsibilities under HazCom (Hazard Communication) regulations.			
2.6	Adhere to responsibilities, regulations, and company policies to protect coworkers and bystanders from hazards.			
2.7	Adhere to responsibilities, regulations, and company policies regarding reporting of accidents and observed hazards, and regarding emergency response procedures.			
2.8	Demonstrate appropriate related safety procedures.			
2.9	Pass with 100 % accuracy a written examination relating to safety issues.			
2.10	Pass with 100% accuracy a performance examination relating to safety.			
2.11	Maintain a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor.			

**STANDARD 3.0: Students will interpret, layout, and fabricate in conformance to construction drawings and written specifications.**

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
3.1	Interpret dimensions and locations of components that are explicitly dimensioned in construction drawings and written specifications.			
3.2	Interpret plan and elevation views shown in construction drawings.			
3.3	Recognize and correctly interpret lines and symbols commonly used in construction drawings.			
3.4	Make layouts of locations and elevations of structural elements and plumbing components.			

**STANDARD 4.0: Students will comprehend the processes required to produce, treat, and distribute water.**

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
4.1	Summarize the sources of water and limits on availability.			
4.2	Describe various treatment processes for preparing potable water.			
4.3	Discuss municipal water delivery systems.			
4.4	Describe hot and cold water distribution in residential and commercial structures.			
4.5	Choose locations for shutoff valves.			

**STANDARD 5.0: Students will size and install cold water systems in residential and commercial structures.**

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
5.1	Determine the size of feeder pipe based on allowable pressure drop, flow requirements, and friction loss.			
5.2	Mitigate the effects of water hammer in commercial and residential water systems.			
5.3	Verifies the pressure integrity of water systems.			
5.4	Prepare water systems for initial use.			
5.5	Diminish the possibility of backflow in commercial and residential water systems.			

**STANDARD 6.0: Students will install and explain the operation of hot water systems in residential and commercial structures.**

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
6.1	Install gas and electric water heaters in residential and commercial water systems.			
6.2	Comprehend the operation of and equipment required for hot water recirculation systems.			
6.3	Explain the types and applications for solar-heated water systems.			

**STANDARD 7.0: Students will explain drain, waste, and vent (DWV) system components.**

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
7.1	Explain the operation of a simple DWV system.			
7.2	Comprehend the components of a DWV system and their functional relationships.			
7.3	Install DWV piping to appropriate or specified grade.			

**STANDARD 8.0: Students will cut and fit plastic, copper, cast iron, and carbon steel pipe as specified in construction drawings, standards, manufacturer's instructions, and code requirements.**

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
8.1	Identify specified pipe by material, schedule, and compatible fittings.			
8.2	Measure and cut pipe with corrections for pipe makeup and fitting allowances.			
8.3	Plan the order of assembly of pipes and fittings.			
8.4	Complete installations of piping systems in accordance with construction drawings, industry standards, manufacturer's instructions, and code requirements.			

**STANDARD 9.0: Students will make joints and install fittings in plastic, copper, cast iron, and carbon steel pipe as specified in construction drawings, standards, manufacturer's instructions, and code requirements.**

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
9.1	Clean and prepare pipe ends, fittings, and valves for joining.			
9.2	Join pipe ends to fittings and valves.			
9.3	Inspect completed joints.			

**STANDARD 10.0: Students will install hangers and supports to plastic, copper, cast iron, and carbon steel pipe as specified in construction drawings, standards, manufacturer's instructions, and code requirements.**

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
10.1	Select hangers and supports compatible with the type of pipe, supporting structure, application, construction drawings, and code requirements.			
10.2	Install hangers and supports onto various supporting structures of different materials.			

**STANDARD 11.0: Students will plan and lay out the rough-in for commercial and residential plumbing systems**

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
11.1	Determine the location of all fixtures and components, given a set of construction drawings and specifications.			
11.2	Complete a material take-off of fixtures, components, and pipe estimates, given a set of construction drawings and specifications.			
11.3	Lay out the physical location of each fixture and pipe run on a real or mock-up structure, given a set of construction drawings and specifications.			
11.4	Install fixture carriers on a real or mock-up structure.			

Additional Comments \_\_\_\_\_